Journal of

POLYMER SCIENCE

VOLUME XXI • 1956

Editorial Board:
W. T. ASTBURY • P. M. DOTY • R. M. FUOSS • J. J. HERMANS • H. MARK

Advisory Board:

T. ALFREY, JR. *Midland, Mich.*
W. O. BAKER *New York, N. Y.*
P. D. BARTLETT *Cambridge, Mass.*
C. W. BUNN *Welwyn Garden City*
S. CLAESSON *Uppsala*
P. DEBYE *Ithaca, N. Y.*
V. DESREUX *Liége*
P. J. FLORY *Ithaca, N. Y.*
K. FREUDENBERG *Heidelberg*
G. GEE *Welwyn Garden City*
P. H. HERMANS *Utrecht*
R. HOUWINK *Delft*
M. L. HUGGINS *Rochester, N. Y.*
I. M. KOLTHOFF *Minneapolis, Minn.*
O. KRATKY *Graz*
W. KUHN *Basel*
M. MAGAT *Paris*
C. S. MARVEL *Urbana, Ill.*
H. W. MELVILLE *Birmingham*
G. NATTA *Milan*
C. C. PRICE *Notre Dame, Ind.*
E. K. RIDEAL *London*
CH. SADRON *Strasbourg*
G. V. SCHULZ *Mainz*
R. SIGNER *Berne*
G. SMETS *Louvain*
H. M. SPURLIN *Wilmington, Del.*
W. H. STOCKMAYER *Cambridge, Mass.*
A. V. TOBOLSKY *Princeton, N. J.*
C. WALLING *New York, N. Y.*
G. S. WHITBY *Akron, Ohio*
B. H. ZIMM *Schenectady, N. Y.*

INTERSCIENCE PUBLISHERS, INC.

© 1956: by Interscience Publishers, Inc.

CONTENTS

Vol. XXI, Issue Nos. 97–99, 1956

Journal of Polymer Science

ISSUE No. 97, JULY

C. A. J. HOEVE: Molecular Weight Distribution of Thermally Polymerized Triglyceride Oils. I. Application of Flory's Polycondensation Theory 1

C. A. J. HOEVE: Molecular Weight Distribution of Thermally Polymerized Triglyceride Oils. II. Effect of Intramolecular Reaction 11

R. J. KERN: Component Effects in Phase Separation of Polymer-Polymer-Solvent Systems 19

MANFRED GORDON and RYONG-JOON ROE: Diffusion and Gelation in Polyadditions. I. Vindication of the Classical Network Theory of Gelation 27

MANFRED GORDON and RYONG-JOON ROE: Diffusion and Gelation in Polyadditions. II. Theory of the Viscosity-Conversion Curve 39

MANFRED GORDON AND RYONG-JOON ROE: Diffusion and Gelation in Polyadditions. III. Statistical-Kinetic Theory of the Trommsdorf Rate Acceleration 57

MANFRED GORDON AND RYONG-JOON ROE: Diffusion and Gelation in Polyadditions. IV. Statistical Theory of Ring Formation and the Absolute Gel Point 75

JOSEPH F. FOSTER and MELVIN D. STERMAN: A Light Scattering Investigation of the Retrogradation of Amylose 91

J. J. WINDLE: Sorption of Water by Wool 103

HAROLD C. BEACHELL and SPERO P. NEMPHOS: Oxidative Degradation of Polyethylene 113

DAVID M. CATES and HOWARD J. WHITE, JR.: Preparation and Properties of Fibers Containing Mixed Polymers. III. Polyacrylonitrile-Silk Fibers 125

LETTERS TO THE EDITORS

FERDINANDO DANUSSO, GIOVANNI MORAGLIO, and GIANPIETRO TALAMINI: Second Order Transition Temperature of Polyethylenes 139

W. P. SLICHTER: On the Morphology of Highly Crystalline Polyethylenes 141

P. SMITH: The Influence of Carbons on Polymerization Reactions 143

L. H. TUNG and W. C. TAYLOR: An Improved Method of Preparing Density Gradient Tubes 144

YUKICHI GO, JUNZO NOGUCHI, MASAMOTO ASAI, and TADAO HAYAKAWA: A (Glycyl-L-alanyl)-polymer Resembling the Crystalline Part of Silk Fibroin. Confirmation of the Meyer-Mark Model 147

E. H. Boasson and J. M. Woestenenk: Negative Spherulites in 66 Nylon (Polyhexamethylene Adipamide) 151
S. H. Pinner: Functionality of Non-equivalent Mixtures 153
F. P. Reding and C. M. Lovell: The Effect of Various Branch Lengths on the Crystallinity of Polyethylenic Resins 158

Issue No. 98, August

Leonard S. Silbert, Zelda B. Jacobs, William E. Palm, Lee P. Witnauer, William S. Port, and Daniel Swern: Vinyl Epoxystearate: Preparation, Polymerization, and Properties of Polymers and Copolymers 161
H. W. Greensmith: Rupture of Rubber. IV. Tear Properties of Vulcanizates Containing Carbon Black 175
Howard W. Starkweather, Jr., George E. Moore, John E. Hansen, Thomas M. Roder, and Richard E. Brooks: Effect of Crystallinity on the Properties of Nylons 189
W. Philippoff and F. H. Gaskins: Viscosity Measurements on Molten Polyethylene 205
Ralph G. Beaman and Francis B. Cramer: Polymer Characterization: A Typical Copolyamide System 223
Francis B. Cramer and Ralph G. Beaman: Some Isomorphous Copolyamides 237
C. S. Marvel and J. W. Johnson, Jr.: Copolymerization of 1,3-Butadiene with 1- and 2-Chloroanthracenes 251
D. S. Villars: Studies on Carbon Black. III. Theory of Bound Rubber 257
L. Rebenfeld and E. Pacsu: Methylation of Secondary Cellulose Acetate with Diazomethane 273
Colin L. Browne and Richard Steele: Effect of Some Organic Acids on the Diffusion of Orange II in Nylon 66 279
Seizo Okamura and Toshinobu Higashimura: Cationic Polymerization of Styrene by Stannic Chloride in Benzene and in Carbon Tetrachloride Solutions 289
H. J. Marrinan and J. Mann: Infrared Spectra of the Crystalline Modifications of Cellulose 301
Tadashi Uchida, Yukio Kurita, Naokazu Koizumi, and Masaji Kubo: Dipole Moments and the Structures of Polyethylene Glycols 313

LETTERS TO THE EDITORS

Bernard M. Mitzner: A Technique for Obtaining the Infrared Absorption Spectra of High Gel Rubbers 323
W. C. Sears and W. W. Parkinson, Jr.: Post-irradiation Oxidation in Rubber and Plastics 325
Norman G. Gaylord and Francis M. Kujawa: Effective Chain Transfer in Polymerization of 3-Buten-2-yl Acetate 327
Norman G. Gaylord and Francis M. Kujawa: Effective Chain Transfer in Polymerization of 3-Buten-2-yl Propionate and Trimethylacetate. Free Radical Displacement Reaction in Allyl Polymerization 329
Hiroshi Matsuo: Effect of Crystallinity on the Infrared Band of Polychlorotrifluoroethylene at 40 $cm.^{-1}$ 331
L. A. Siegel and Ignacio Tinoco, Jr.: Small-Angle X-Ray Scattering of Iodinated Bovine Serum Albumin 335

GEORGE E. HAM: Chain Transfer in Acrylonitrile Polymerization 337
A. ADICOFF and A. BUSELLI: Reactivity Ratios for Vinyl Stearate-Vinyl Acetate Copolymers 340
V. STANNETT: Particle Size Distribution of Emulsifier-Free Latices 343
P. J. FLORY and LEO MANDELKERN: Melting of Copolymers 345
EDWARD S. ALLEN: A Probability Theory for the Condensation of A-R-B_2 Units 349

BOOK REVIEW

Cellulose and Cellulose Derivatives. Part III. Editors: EMIL OTT, HAROLD M. SPURLIN, and MILDRED W. GRAFFLIN. Reviewed by NILS GRALÉN 312

ISSUE NO. 99, SEPTEMBER

JEROME GAVIS and STANLEY JENSEN GILL: Tensile Stress in Jets of Viscoelastic Fluids. II 353
A. KELLER: Studies of Orientation Phenomena in Crystallizing Polymers 363
RICHARD S. STEIN and FORREST H. NORRIS: The X-Ray Diffraction, Birefringence, and Infrared Dichroism of Stretched Polyethylene 381
I. J. O'DONNELL and E. F. WOODS: The Size and Configuration of Some Soluble Wool Keratins 397
CHARLES W. LEWIS and DONALD H. HOGLE: The Rotation of Polar Groups in High Polymers 411
SURESH N. CHINAI and RUDOLPH A. GUZZI: Poly-*n*-butyl Methacrylate. III. Dilute Solution Properties by Viscosity and Light Scattering 417
CHARLES F. FERRARO, JOHN J. MAURER, and WALTER T. ZAGAR: A Comparison of the Dielectric Dispersion Behavior of Corn Amylose and Amylopectin Acetates 427
J. L. PAULEY and M. K. TESTERMAN: Dielectric Dispersion in Solutions of Copper-Cellulose Nitrate Complex 437
JAMES E. AYER: Determination of Primary Adsorbed Water in Cotton Fibers by Drying Techniques 455
D. O. JORDAN, A. R. MATHIESON, and M. R. PORTER: Hydrodynamic Properties of Polyelectrolytes. Part I. Poly-4-vinyl-*N*-*n*-butylpyridinium Bromide 463
D. O. JORDAN, A. R. MATHIESON, and M. R. PORTER: Hydrodynamic Properties of Polyelectrolytes. Part II. Poly-4-vinylpyridine 473
A. R. MATHIESON and M. R. PORTER: Hydrodynamic Properties of Polyelectrolytes. Part III. Sodium Alginate 483
A. R. MATHIESON and M. R. PORTER: Hydrodynamic Properties of Polyelectrolytes. Part IV. Viscosity of Polyelectrolytes 495
J. P. BERRY: The Stress Relaxation of Sulfur Vulcanizates of Natural Rubber 505
I. M. KOLTHOFF, D. S. BRACKMAN, and E. J. MEEHAN: A Redox System Utilizing *N*-Nitrosoacetanilide for the Emulsion Polymerization of Styrene and of Butadiene-Styrene 519
H. W. W. BRETT and H. H. G. JELLINEK: Degradation of Long-Chain Molecules by Ultrasonic Waves. Part VI. Effect of Pressure 535

LETTERS TO THE EDITORS

F. P. Reding: Transitions in Aliphatic Olefin Polymers 547
R. E. Dunbar and Earl C. Hutchins: Reaction Studies of Trimesic Acid in Polyester Formation 550
R. S. Aries and A. P. Sachs: Molecular Weight Distribution of Polyethylene Prepared at Low Ethylene Pressure 551
F. A. Long and Ian Watt: Concentration Gradients during Sorption of Vapor into Polymers in the Glassy State 554
E. R. Walter and F. P. Reding: The Appearance of a New Crystalline Phase in Stretched, Linear Polyethylene 557
Takayuki Otsu: Organic Polysulfides as Polymerization Initiators 559
E. R. Walter and F. P. Reding: Variations in Unit Cell Dimensions in Polyethylene 561
H. Smith: The Molecular Weight of Substantially Unbranched Polyethylene 563
Kurt Rossmann: Further Investigations Regarding the Bonding Properties of Polyethylene 565

BOOK REVIEW

The Mechanical Properties of Textile Fibres, R. Meredith, ed. Reviewed by M. T. O'Shaughnessy 546

ERRATA

P. Fleming, A. R. Peacocke, and R. G. Wallis: Determination of the Second Virial Coefficient in Dilute Polymer Solutions from Light Scattering Data (article in *J. Polymer Sci.*, 19, 495–502, 1956) 518
Author Index, Volume XXI 567
Subject Index, Volume XXI 569

INDEX

AUTHOR INDEX, VOLUME XXI

Adicoff, A., and Buselli, A.: Reactivity ratios for vinyl stearate-vinyl acetate copolymers, 340

Allen, E. S.: A probability theory for the condensation of A-R-B_2 units, 349

Aries, R. S., and Sachs, A. P.: Molecular weight distribution of polyethylene prepared at low ethylene pressure, 551

Asai, M.: see Go, Y.

Ayer, J. E.: Determination of primary adsorbed water in cotton fibers by drying techniques, 455

Beachell, H. C., and Nemphos, S. P.: Oxidative degradation of polyethylene, 113

Beaman, R. G., and Cramer, F. B.: Polymer characterization: A typical copolyamide system, 223

——, see Cramer, F. B.

Berry, J. P.: The stress relaxation of sulfur vulcanizates of natural rubber, 505

Boasson, E. H., and Woestenenk, J. M.: Negative spherulites in 66 nylon (polyhexamethylene adipamide), 151

Brackman, D. S.: see Kolthoff, I. M.

Brett, H. W. W., and Jellinek, H. H. G.: Degradation of long-chain molecules by ultrasonic waves. Part VI. Effect of pressure, 535

Brooks, R. E.: see Starkweather, H. W., Jr.

Browne, C. L., and Steele, R.: Effect of some organic acids on the diffusion of Orange II in nylon 66, 279

Buselli, A.: see Adicoff, A.

Cates, D. M., and White, H. J., Jr.: Preparation and properties of fibers containing mixed polymers. III. Polyacrylonitrile-silk fibers, 125

Chinai, S. N., and Guzzi, R. A.: Poly-*n*-butyl methacrylate. III. Dilute solution properties by viscosity and light scattering, 417

Cramer, F. B., and Beaman, R. G.: Some isomorphous copolyamides, 237

——, see Beaman, R. G.

Danusso, F., Moraglio, G., and Talamini, G.: Second order transition temperature of polyethylenes, 139

Dunbar, R. E., and Hutchins, E. C.: Reaction studies of trimesic acid in polyester formation, 550

Ferraro, C. F., Maurer, J. J., and Zagar, W. T.: A comparison of the dielectric dispersion behavior of corn amylose and amylopectin acetates, 427

Fleming, P., Peacocke, A. R., and Wallis, R. G.: Determination of the second virial coefficient in dilute polymer solutions from light scattering data: *errata*, 518

Flory, P. J., and Mandelkern, L.: Melting of copolymers, 345

Foster, J. F., and Sterman, M. D.: A light scattering investigation of the retrogradation of amylose, 91

Fujawa, F. M.: see Gaylord, N. G.

Gaskins, F. H.: see Philippoff, W.

Gavis, J., and Gill, S. J.: Tensile stress in jets of viscoelastic fluids. II, 353

Gaylord, N. G., and Kujawa, F. M.: Effective chain transfer in polymerization of 3-buten-2-yl acetate, 327

——, and ——: Effective chain transfer in polymerization of 3-buten-2-yl propionate and trimethylacetate. Free radical displacement reaction in allyl polymerization, 329

Gill, S. J.: see Gavis, J.

Go, Y., Noguchi, J., Asai, M., and Hayakawa, T.: A (glycyl-L-alanyl)-polymer resembling the crystalline part of silk fibroin. Confirmation of the Meyer-Mark model, 147

Gordon, M., and Roe, R.-J.: Diffusion and gelation in polyadditions. I. Vindication of the classical network theory of gelation, 27

——, and ——: II. Theory of the viscosity–conversion curve, 39

——, and ——: III. Statistical-kinetic theory of the Trommsdorf rate acceleration, 57

——, and ——: IV. Statistical theory of ring formation and the absolute gel point, 75

Greensmith, H. W.: Rupture of rubber. IV. Tear properties of vulcanizates containing carbon black, 175

Guzzi, R. A.: see Chinai, S. N.

Ham, G. E.: Chain transfer in acrylonitrile polymerization, 337

Hansen, J. E.: see Starkweather, H. W., Jr.

Hayakawa, T.: see Go, Y.

Higashimura, T.: see Okamura, S.

Hoeve, C. A. J.: Molecular weight distribution of thermally polymerized triglyceride oils. I. Application of Flory's polycondensation theory, 1

——: II. Effect of intramolecular reaction, 11

Hogle, D. H.: see Lewis, C. W.

Hutchins, E. C.: see Dunbar, R. E.

Jacobs, Z. B.: see Silbert, L. S.

Jellinek, H. H. G.: see Brett, H. W. W.

Johnson, J. W., Jr.: see Marvel, C. S.

Jordan, D. O., Mathieson, A. R., and Porter, M. R.: Hydrodynamic properties of polyelectrolytes. Part I. Poly-4-vinyl-*N*-*n*-butylpyridinium bromide, 463

——, ——, and ——: Part II. Poly-4-vinylpyridine, 473

Keller, A.: Studies of orientation phenomena in crystallizing polymers, 363

Kern, R. J.: Component effects in phase

separation of polymer-polymer-solvent systems, 19
Koizumi, N.: see Uchida, T.
Kolthoff, I. M., Brackman, D. S., and Meehan, E. J.: A redox system utilizing *N*-nitrosoacetanilide for the emulsion polymerization of styrene and of butadiene-styrene, 519
Kubo, M.: see Uchida, T.
Kurita, Y.: see Uchida, T.
Lewis, C. W., and Hogle, D. H.: The rotation of polar groups in high polymers, 411
Long, F. A., and Watt, I.: Concentration gradients during sorption of vapor into polymers in the glassy state, 554
Lovell, C. M.: see Reding, F. P.
Mandelkern, L.: see Flory, P. J.
Mann, J.: see Marrinan, H. J.
Marrinan, H. J., and Mann, J.: Infrared spectra of the crystalline modifications of cellulose, 301
Marvel, C. S., and Johnson, J. W., Jr.: Copolymerization of 1,3-butadiene with 1- and 2-chloroanthracenes, 251
Mathieson, A. R., and Porter, M. R.: Hydrodynamic properties of polyelectrolytes. Part III. Sodium alginate, 483
——, and ——: Part IV. Viscosity of polyelectrolytes, 495
——: see Jordan, D. O.
Matsuo, H.: Effect of crystallinity on the infrared band of polychlorotrifluoroethylene at 490 cm.$^{-1}$, 331
Maurer, J. J.: see Ferraro, C. F.
Meehan, E. J.: see Kolthoff, I. M.
Mitzner, B. M.: A technique for obtaining the infrared absorption spectra of high gel rubbers, 323
Moore, G. E.: see Starkweather, H. W., Jr.
Moraglio, G.: see Danusso, F.
Nemphos, S. P.: see Beachell, H. C.
Noguchi, J.: see Go, Y.
Norris, F. H.: see Stein, R. S.
O'Donnell, I. J., and Woods, E. F.: The size and configuration of some soluble wool keratins, 397
Okamura, S., and Higashimura, T.: Cationic polymerization of styrene by stannic chloride in benzene and in carbon tetrachloride solutions, 289
Otsu, T.: Organic polysulfides as polymerization initiators, 559
Pacsu, E.: see Rebenfeld, L.
Palm, W. E.: see Silbert, L. S.
Parkinson, W. W., Jr.: see Sears, W. C.
Pauley, J. L., and Testerman, M. K.: Dielectric dispersion in solutions of copper-cellulose nitrate complex, 437
Peacocke, A. R.: see Fleming, P.
Philippoff, W., and Gaskins, F. H.: Viscosity measurements on molten polyethylene, 205
Pinner, S. H.: Functionality of non-equivalent mixtures, 153
Port, W. S.: see Silbert, L. S.
Porter, M. R.: see Jordan, D. O.; Mathieson, A. R.
Rebenfeld, L., and Pacsu, E.: Methylation of secondary cellulose acetate with diazomethane, 273
Reding, F. P.: Transitions in aliphatic olefin polymers, 547
——, and Lovell, C. M.: The effect of various branch lengths on the crystallinity of polyethylenic resins, 158
——: see Walter, E. R.
Roder, T. M.: see Starkweather, H. W., Jr.
Roe, R.-J.: see Gordon, M.
Rossmann, K.: Further investigations regarding the bonding properties of polyethylene, 565
Sachs, A. P.: see Aries, R. S.
Sears, W. C., and Parkinson, W. W., Jr.: Post-irradiation oxidation in rubber and plastics, 325
Siegel, L. A., and Tinoco, I., Jr.: Small-angle x-ray scattering of iodinated bovine serum albumin, 335
Silbert, L. S., Jacobs, Z. B., Palm, W. E., Witnauer, L. P., Port, W. S., and Swern, D.: Vinyl epoxystearate: Preparation, polymerization, and properties of polymers and copolymers, 161
Slichter, W. P.: On the morphology of highly crystalline polyethylenes, 141
Smith, H.: The molecular weight of substantially unbranched polyethylene, 563
Smith, P.: The influence of carbons on polymerization reactions, 143
Stannett, V.: Particle size distribution of emulsifier-free latices, 343
Starkweather, H. W., Jr., Moore, G. E., Hansen, J. E., Roder, T. M., and Brooks, R. E.: Effect of crystallinity on the properties of nylons, 189
Steele, R.: see Browne, C. L.
Stein, R. S., and Norris, F. H.: The x-ray diffraction, birefringence, and infrared dichroism of stretched polyethylene, 381
Sterman, M. D.: see Foster, J. F.
Swern, D.: see Silbert, L. S.
Talamini, G.: see Danusso, F.
Taylor, W. C.: see Tung, L. H.
Testerman, M. K.: see Pauley, J. L.
Tinoco, I., Jr.: see Siegel, L. A.
Tung, L. H., and Taylor, W. C.: An improved method of preparing density gradient tubes, 144
Uchida, T., Kurita, Y., Koizumi, N., and Kubo, M.: Dipole moments and the structures of polyethylene glycols, 313
Villars, D. S.: Studies on carbon black. III. Theory of bound rubber, 257
Wallis, R. G.: see Fleming, P.
Walter, E. R., and Reding, F. P.: The appearance of a new crystalline phase in stretched, linear polyethylene, 557
——, and ——: Variations in unit cell dimensions in polyethylene, 561
Watt, I.: see Long, F. A.
White, H. J., Jr.: see Cates, D. M.
Windle, J. J.: Sorption of water by wool, 103
Witnauer, L. P.: see Silbert, L. S.
Woestenenk, J. M.: see Boasson, E. H.
Woods, E. F.: see O'Donnell, I. J.
Zagar, W. T.: see Ferraro, C. F.

SUBJECT INDEX, VOLUME XXI

Acrylonitrile polymerization, chain transfer, 337
Aliphatic olefin polymers, transitions in, 547
Allyl polymerization, free radical displacement reaction, 329
Amylopectin acetates, dielectric dispersion behavior, 427
Amylose, retrogradation, 91
Birefringence, stretched polyethylene, 381
Bonding properties, polyethylene, 565
Bovine serum albumin, iodinated, small-angle x-ray scattering, 335
1,3-Butadiene, copolymerizations with 1- and 2-chloroanthracenes, 251
Butadiene-styrene, emulsion polymerization, 519
3-Buten-2-yl acetate, chain transfer in polymerization of, 327
3-Buten-2-yl propionate, chain transfer in polymerization, 329
Carbon black, 257
  tear properties of vulcanizates containing, 175
Carbons, influence on polymerization reactions, 143
Cationic polymerization, of styrene, 289
Cellulose, infrared spectra of crystalline modifications, 301
Cellulose acetate, secondary, methylation with diazomethane, 273
Cellulose nitrate-copper complex, dielectric dispersion, 437
Chain transfer, acrylonitrile polymerization, 337
  in polymerization of 3-buten-2-yl acetate, 327
  in polymerization of 3-buten-2-yl propionate and trimethylacetate, 329
1- and 2-Chloroanthracenes, copolymerization with 1,3-butadiene, 251
Concentration gradients, during sorption of vapor in polymers in the glassy state, 554
Condensation of A-R-B_2 units, probability theory, 349
Condensation theory, application to molecular weight distribution of triglyceride oils, 1
Copolyamide system, 223
Copolyamides, isomorphous, 237
Copolymers, melting, 345
Corn amylose, dielectric dispersion behavior, 427
Cotton, determination of primary absorbed water in, 455
Crystallinity, effect on infrared band of polychlorotrifluoroethylene, 331
  effect on nylon properties, 189
  of polyethlenic resins, 158
Crystallizing polymers, orientation phenomena, 363
Degradation, long-chain molecules by ultrasonic waves, 535
  oxidative, of polyethylene, 113
Density gradient tubes, preparation, 144
Diazomethane, for methylation of secondary cellulose acetate, 273
Dielectric dispersion, copper-cellulose nitrate complex, 437
Dielectric dispersion behavior, corn amylose and amylopectin acetates, 427
Diffusion, in polyadditions, 27, 39, 57, 75
Drying techniques, for determination of primary absorbed water in cotton fibers, 455
Emulsion polymerization, styrene and butadiene-styrene, 519
Fibers, containing mixed polymers, 125
Gelation, in polyadditions, 27, 39, 57, 75
Glycyl-L-alanyl polymer, 147
Hydrodynamic properties, polyelectrolytes, 463, 473, 483, 495
Infrared absorption spectra, high gel rubbers, 323
Infrared band, of polychlorotrifluoroethylene, effect of crystallinity, 331
Infrared dichroism, stretched polyethylene, 381
Infrared spectra, crystalline modifications of cellulose, 301
Initiators, organic polysulfides as, 559
Intramolecular reaction, effect on molecular weight distribution of triglyceride oils, 11
Latices, emulsifier-free, particle size distribution, 343
Light scattering, amylose retrogradation, 91
  for determination of second virial coefficient in dilute polymer solutions, 518
  poly-*n*-butyl methacrylate, 417
Molecular weight, unbranched polyethylene, 563
Molecular weight distribution, polyethylene, 551
  triglyceride oils, 1, 11
Morphology, of polyethylenes, 141
N-Nitrosoacetanilide, for emulsion polymerization of styrene and butadiene-styrene, 519
Non-equivalent mixtures, functionality, 153
Nylon, effect of crystallinity on properties, 189
66 Nylon, effect of organic acids on diffusion of Orange II in, 279
  negative spherulites in, 151
Orientation phenomena, crystallizing polymers, 363
Particle size distribution, emulsifier-free latices, 343
Phase separation, polymer-polymer-solvent systems, 19
Plastics, post-irradiation oxidation, 325
Polar groups, rotation in high polymers, 411
Polyacrylonitrile-silk fibers, 125

Polyadditions, diffusion and gelation, 27, 39, 57, 75
Poly-*n*-butyl methacrylate, dilute solutions properties, 417
Polychlorotrifluoroethylene, effect of crystallinity on infrared band, 331
Polyelectrolytes, hydrodynamic properties, 463, 473, 483, 495
  viscosity, 495
Polyester formation, trimesic acid in, 550
Polyethylene(s), bonding properties, 565
  molecular weight distribution, 551
  molten, viscosity measurements, 205
  morphology, 141
  new crystalline phase in, 557
  oxidative degradation, 113
  second order transition temperature, 139
  unbranched, molecular weight, 563
  unit cell dimensions, 561
  x-ray diffraction, birefringence, and infrared dichroism, 381
Polyethylene glycols, dipole moments and structures, 313
Polyethylenic resins, effect of branch lengths on crystallinity, 158
Polymer-polymer-solvent systems, phase separation, 19
Polysulfides, organic, as polymerization initiators, 559
Poly-4-vinyl-*N*-*n*-butylpyridinium bromide, hydrodynamic properties, 463
Poly-4-vinylpyridine, hydrodynamic properties, 463
Reactivity ratios, vinyl stearate-vinyl acetate copolymers, 340
Reviews
  Cellulose and cellulose derivatives, Part III, editors: E. Ott, H. M. Spurlin, and M. Grafflin, 312
  The mechanical properties of textile fibres, editor: R. Meredith, 546
Rubber, bound, 257
  high gel, infrared absorption spectra, 323
  natural, stress relaxation of sulfur vulcanizates, 505
  post-irradiation oxidation, 325
  rupture, 175
Second virial coefficient, determination in polymer solutions from light scattering, 518
Silk-polyacrylonitrile fibers, 125
Sodium alginate, hydrodynamic properties, 463
Solvent-polymer-polymer systems, phase separation, 19
Statistical-kinetic theory, in polyadditions, 57
Statistical theory, of ring formation, in polyadditions, 75
Stress relaxation, sulfur vulcanizates of natural rubber, 505
Styrene, cationic polymerization, 289
  emulsion polymerization, 519
Tear properties, of vulcanizates, 175
Tensile stress, in jets of viscoelastic fluids, 353
Triglyceride oils, molecular weight distribution, 1, 11
Trimethylacetate, chain transfer in polymerization, 329
Ultrasonic waves, for degradation of long-chain molecules, 535
Vinyl acetate-vinyl stearate copolymers, reactivity ratios, 340
Vinyl epoxystearate, polymers and copolymers, 161
Vinyl stearate-vinyl acetate copolymers, reactivity ratios, 340
Viscoelastic fluids, tensile stress of jets in, 353
Viscosity, molten polyethylene, 205
  poly-*n*-butyl methacrylate, 417
Viscosity-conversion curve theory, in polyadditions, 39
Vulcanizates, sulfur, or natural rubber, 505
  tear properties, 175
Wool, sorption of water, 103
Wool keratins, soluble, size and configuration, 397
X-ray diffraction, stretched polyethylene, 381
X-ray scattering, small-angle, or iodinated bovine serum albumin, 335